

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/768,003

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An optical pickup apparatus for reading information from a plurality of types of discs at different reading wavelengths, comprising:
 - a light source having a plurality of integrated light emitting portions for emitting laser beams of different wavelengths, said light source being adapted to selectively emit one of the laser beams of different wavelengths;
 - a photodetector for detecting the laser beam comprising, a pair of subbeam receiving sections disposed one after the other in a direction in which central division lines extend, for receiving subbeams, and a plurality of four-division light receiving sections arranged such that one of the subbeams is received by a different four-division light receiving section adjacent to a four-division light receiving section which receives the selected laser beam; and
 - an optical system for directing the laser beam emitted from said light source to said disc, and for directing the laser beam reflected by said disc to said photodetector;
wherein said light source is positioned such that a straight line connecting respective light emitting points of said plurality of light emitting portions is coincident with a tangential line of a track on a disc to be reproduced.

2. (original): An optical pickup apparatus according to claim 1, wherein:

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said optical system includes an astigmatism element for providing the laser beam with astigmatism, and said photodetector includes a plurality of four-division light receiving sections arranged corresponding to each of the plurality of laser beams of different wavelengths, and is configured such that central division lines of said four-division light receiving sections are in alignment with one another; and

said photodetector is disposed such that said central division lines are coincident with said tangential line of the track.

3. (currently amended): An optical pickup apparatus according to claim 1, wherein:
said optical system includes an astigmatism element for providing the laser beam with astigmatism, and a diffraction element for generating a pair of subbeams from the laser beam;
~~said photodetector includes a~~ wherein the plurality of four-division light receiving sections are arranged in correspondence to each of the plurality of laser beams of different wavelengths, ~~said plurality of four division light receiving sections being and further~~ arranged such that central division lines thereof are in alignment with one another[[;]]

~~said photodetector further includes a pair of subbeam receiving sections, disposed one after the other in a direction in which said central division lines extend, for receiving said subbeams; and~~

~~said plurality of four division light receiving sections are arranged such that one of said subbeams is received by a different four division light receiving section adjacent to a four division light receiving section which receives the selected laser beam.~~

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4. (currently amended): An optical pickup apparatus according to claim 1, wherein:
said optical system includes an astigmatism element for providing the laser beam with
astigmatism, and a diffraction element for generating a pair of subbeams from said laser beam;

~~said photodetector includes a~~ wherein the plurality of four-division light receiving
sections are arranged in correspondence to each of the plurality of laser beams of different
wavelengths, ~~said plurality of four-division light receiving sections and further~~ arranged such
that central division lines thereof are in alignment with one another;

~~said photodetector further includes a pair of subbeam receiving sections, disposed one
after the other in a direction in which said central division lines extend, for receiving said
subbeams; and~~

~~said subbeam receiving sections are formed with regions which can receive all subbeams
generated from all the laser beams of different wavelengths emitted from said light source.~~

5. (currently amended): An optical pickup apparatus according to claim 1, wherein:
said optical system includes an astigmatism element for providing said laser beam with
astigmatism, and a diffraction element for generating a pair of subbeams from the laser beam;
~~said photodetector includes a~~ wherein the plurality of four-division light receiving
sections arranged in correspondence to each of the plurality of laser beams of different
wavelengths, said plurality of four-division light receiving sections arranged such that central
division lines thereof are in alignment with one another;

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wherein further two divisional regions of the four-division light receiving section for receiving an arbitrary laser beam serve as two divisional regions of a four-division light receiving section for receiving a laser beam of a different wavelength from that of said arbitrary laser beam; and

the remaining two divisional regions other than said two divisional regions are also used as a subbeam receiving section for receiving said subbeam.

6. (currently amended): An optical pickup apparatus according to claim 1 for reading information from a plurality of types of discs at different reading wavelengths, comprising:

a light source having a plurality of integrated light emitting portions for emitting laser beams of different wavelengths, said light source being adapted to selectively emit one of the laser beams of different wavelengths;

a photodetector for detecting the laser beam; and
an optical system for directing the laser beam emitted from said light source to said disc,
and for directing the laser beam reflected by said disc to said photodetector;

wherein said light source is positioned such that a straight line connecting respective light emitting points of said plurality of light emitting portions is coincident with a tangential line of a track on a disc to be reproduced, wherein and said light source is a one-chip laser diode which is formed with one electrode as a common electrode for said plurality of light emitting portions.

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7. (new): A photodetector used in conjunction with an optical pickup apparatus for reading information from a plurality of types of recording discs at different reading wavelengths, the photodetector comprising:

a pair of subbeam receiving sections disposed one after the other in a direction in which central division lines extend, for receiving subbeams; and

a plurality of four-division light receiving sections arranged such that one of the subbeams is received by a different four-division light receiving section adjacent to a four-division light receiving section which receives a selected laser beam.

8. (new): A photodetector used in conjunction with an optical pickup apparatus for reading information from a plurality of types of recording discs at different reading wavelengths, the photodetector comprising a pair of subbeam receiving sections disposed one after the other in a direction in which central division lines extend, for receiving subbeams, said subbeam receiving sections being formed with regions which can receive all subbeams generated from all the laser beams of different wavelengths emitted from said light source.

9. (new): An optical pickup apparatus for reading information from a plurality of types of recording discs at different reading wavelengths, comprising:

a light source comprising a plurality of integrated light emitting portions operable to selectively emit respective laser beams having different wavelengths;

an optical system operable to direct a selected laser beam towards an object disc;

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a photodetector operable to detect a reflected laser beam reflected from the object disc, said photodetector comprising a plurality of subbeam receiving sections and a plurality of four-division light receiving sections.

10. (new): An optical pickup apparatus as claimed in claim 9, wherein each of the subbeam receiving sections of said photodetector is operable to receive subbeams of each of the laser beams having different respective wavelengths.

11. (new): An optical pickup apparatus as claimed in claim 10, wherein the subbeam receiving sections of said photodetector are operable to generate tracking error signals corresponding to the laser beams.

12. (new): An optical pickup apparatus as claimed in claim 9, wherein each of the four-division light receiving sections corresponds to a single laser beam having a respective wavelength and is operable to receive a main portion of the corresponding laser beam and generate a read signal and a focus error signal for the corresponding laser beam.

13. (new): An optical pickup apparatus for reading information from a plurality of types of discs at different reading wavelengths, comprising:

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a light source having a plurality of integrated light emitting portions for emitting laser beams of different wavelengths, said light source being adapted to selectively emit one of the laser beams of different wavelengths;

a photodetector comprising, a pair of subbeam receiving sections disposed one after the other in a direction in which central division lines extend, for receiving subbeams, and a plurality of four-division light receiving sections arranged corresponding to each of the plurality of laser beams of different wavelengths and configured such that central division lines of said four-division light receiving sections are in alignment with one another; and

an optical system for directing the laser beam emitted from said light source to said disc, and for directing the laser beam reflected by said disc to said photodetector.

14. (new): An optical pickup apparatus according to claim 13, wherein said optical system includes an astigmatism element for providing the laser beam with astigmatism.

15. (new): An optical pickup apparatus according to claim 13, wherein two divisional regions of the four-division light receiving section for receiving an arbitrary laser beam serve as two divisional regions of a four-division light receiving section for receiving a laser beam of a different wavelength from that of said arbitrary laser beam; and the remaining two divisional regions other than said two divisional regions are also used as a subbeam receiving section for receiving said subbeam.

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16. (new): An optical pickup apparatus according to claim 13, wherein said optical system includes an astigmatism element for providing the laser beam with astigmatism, and a diffraction element for generating a pair of subbeams from the laser beam.

17. (new): An optical pickup apparatus according to claim 13, wherein said light source is a one-chip laser diode which is formed with one electrode as a common electrode for said plurality of light emitting portions.

18. (new): An optical pickup apparatus according to claim 13, wherein said plurality of four-division light receiving sections are arranged such that one of said subbeams is received by a different four- division light receiving section adjacent to a four-division light receiving section which receives the selected laser beam.